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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of)	
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Zhang, Ji-Guang)	Group Art Unit: 1745
)	
Application No. 10/047,407)	Examiner: Alejandro, Raymond
)	
Filing Date: January 10, 2002)	
)	
For: PACKAGED THIN FILM BATTERIES)	
AND METHOD OF PACKAGING THIN)	
FILM BATTERIES)	

TRANSMITTAL OF APPEAL BRIEF

Commissioner of Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The undersigned submits herewith an Appeal Brief in the subject application. The government fee of \$250.00 was previously paid on December 16, 2004.

Respectfully submitted,

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this 3 day of January 2006.

Dorian B. Kennedy



THE UNITED STATES PATENT AND TRADEMARK OFFICE

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APPEAL BRIEF



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APPEAL BRIEF

I. INTRODUCTION

This is an appeal from the decision mailed September 15, 2005 of the Patent Examiner, Group Art Unit 1745, finally rejecting claims 1-16.

II. REAL PARTY IN INTEREST

The Applicant is the real party in interest.

III. RELATED APPEALS AND INTERFERENCES

None.

IV. STATUS OF THE CLAIMS

Claims 1-16 stand rejected by the final action mailed September 15, 2005. Claims 1-16 are pending. Applicant hereby appeals the final rejection of claims 1-16. Applicant hereby cancels claims 17-20.

V. STATUS OF AMENDMENTS

None.

VI. SUMMARY OF CLAIMED SUBJECT MATTER

Applicant's claim 1 claims a method of sealing a battery cell (Fig. 3, reference 11) having a top surface, a bottom surface and peripheral edges. The method comprises the steps of (a) positioning a first layer of packaging foil over the top surface of the battery cell (page 5, lines 13-17, Fig. 3 ref. 21), (b) positioning a second layer of packaging foil over the bottom surface of the battery cell (page 5, lines 13-17, Fig. 3 ref. 22), and (c) heat sealing the first layer of packaging foil to the top surface of the battery cell, heat sealing the second layer of packaging foil to the bottom surface of the battery cell, and heat sealing the first layer of packaging foil to the second layer of packaging foil about the periphery of the battery cell, and a product resulting from the process (page 6, lines 4-8, Fig. 2, page 6, lines 15-23).

Applicant's claim 7 claims a method of sealing a battery cell having a top surface, a bottom surface and peripheral edges, the method comprises the steps of (a) providing a first layer of packaging foil (page 5, lines 13-17, Fig. 3 ref. 21); (b) providing a second layer of packaging foil (page 5, lines 13-17, Fig. 3 ref. 21); (c) positioning a battery cell between the first and second layers of packaging foil (page 5, lines 13-17, Fig. 3 ref. 21); (d) heating the first and second layer of packaging foil (page 6, lines 4-8, Fig. 2, page 6, lines 15-23); and (e) pressing the first layer against the top surface of the battery cell and pressing the second layer against the bottom surface of the battery cell (page 6, lines 4-8, Fig. 2, page 6, lines 15-23). With this construction, the heating and pressing of the first and second layers against the battery cell causes the first and second layers to be sealed to the battery cell.

Applicant's claim 13 claims a method of sealing a battery cell having an exterior top surface, an exterior bottom surface and exterior peripheral edges, the method comprises the steps of: (a) providing two sheets of overlaying packaging foils (page 5, lines 13-17, Fig. 3 ref. 21); (b) positioning a battery cell between the two sheets of packaging foil (page 5, lines 13-17, Fig. 3 ref. 21); and (c) heat sealing the packaging foil to the exterior surface of the battery cell (page 6, lines 4-8, Fig. 2, page 6, lines 15-23).

VII. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 1-5, 7-11 and 13-15 stand rejected under 35 U.S.C. §102 as being anticipated by Xing et al. Claims 6, 12 and 16 stand rejected under 35 U.S.C. §103 as being obvious over Xing et al.

VIII. ARGUMENT

(A) Claims 1-5, 7-11 and 13-15

(1) Claim 1

Applicant's invention of claim 1 defines a method of sealing a battery cell having a top surface, a bottom surface and peripheral edges. The method comprises the steps of (a) positioning a first layer of packaging foil over the top surface of the battery cell, (b) positioning a second layer of packaging foil over the bottom surface of the battery cell, and (c) heat sealing the first layer of packaging foil to the top surface of the battery cell, heat sealing the second layer of packaging foil to the bottom surface of the battery cell, and heat sealing the first layer of packaging foil to the second layer of packaging foil about the periphery of the battery cell.

In essence, the examiner contends that Applicant's use of the term heat sealed is not disclosed in the specifications and that the term may be used to encompass the teachings of Xing et al. (US Patent No. 6,284,406). Applicant respectfully disagrees

with the examiner on both points.

Firstly, the term heat sealed is made readily apparent from the teachings recited in the specifications. Commencing on Page 2, line 15, the Applicant recites that the prior art utilized bags with an open top that were later "heat sealed". From this it is shown that "heat sealed" means that the peripheral edge was sealed in a manner wherein one layer is sealed or bonded to another layer. The Applicant also describes the heat sealing process on Page 6, line 4 through Page 7, line 4, wherein Applicant specifically recites that:

"The battery cell 11, two layers of packaging foil 21 and 22, and two layers of carrier material 24 and 25 are then passed through a laminator having a pair of heaters 28 and a pair of pressure applying means in the form of lamination rollers 29. ..The temperature, pressure and rate of travel through the laminator causes the interior surface of the packaging foils 21 and 22 to be heat sealed to the corresponding surface of the battery cell 11 facing the packaging foils. As such, the interior surface of the bottom layer of packaging foil 21 is heat sealed to the bottom surface of the substrate 13 and the interior surface of the top layer of packaging foil 22 is heat sealed to the top surface of passivation layer 19, as shown in Fig. 2. Although within the scope of the present invention many different combinations of temperature, pressure and material travel speeds through the laminator may be discovered which heat seals the packaging layers to the battery cell. However, it has been discovered that a temperature of 155 degrees Celsius, a pressure of 5 p.s.i. and a

travel speed of 25 cm/min for a Class PPD packaging material produces a proper heat seal between the packaging foils and the battery cell."

Applicant also points out the specification specifically points out the benefit of heat sealing on Page 7, lines 4-27, which inherently point out what is not intended to be meant by heat sealing through examples of the prior art. The specification therein recite the following:

"It has been discovered that by heat sealing the packaging foils directly to the battery cell the battery cell is provided with a substantially improved protective layer thereby improving the overall packaged battery. This improvement is achieved in part by the lamination process wherein as the packaging foils are heat sealed to the battery cell and as such occurs the gases between the foils and the battery cell are driven out. The use of packaging materials with the prior art batteries produced spaces between the battery cell and the packaging material, thereby allowing the capture of gases within these spaces which could degrade the components of the battery cell. The process of laminating the packaging material directly to the battery cell also creates a smaller overall battery..."

The Applicant's specification further recite on Page 8, lines 1-8,

"It should be understood that while the present invention strives to laminate the exterior surface of the battery cell completely with the

packaging material, the invention is not limited to such. However, it is desirous to laminate at least a majority of the top surface of the battery cell, the active material surface, so as to be in sealing engagement with the packaging foil."

As such, it is clear that the meaning of heat sealing is the same of lamination, wherein the majority of the surfaces are in sealing engagement with each other, not merely a peripheral edge as suggested by the examiner.

The examiner also submits that Applicant's term does not describe whether this is a "spot" heat seal or not. Applicant respectfully submits that the specifications description of sealing a **majority** of the surface clearly indicates that this is not a spot weld but that it encompasses a broad surface of bonding engagement between layers.

Lastly, the examiner contends that the Applicant's heat sealing step does not specifically require it to be directly heat sealed to the top surface and the bottom surface. This contention is incorrect as Applicant's claim 1 clearly states that "(c) heat sealing the first layer of packaging foil to the top surface of the battery cell, heat sealing the second layer of packaging foil to the bottom surface of the battery cell". Applicant's claim 1 also distinguishes this heat sealing from the peripheral edge heat sealing by reciting that in addition to the first two heat sealing steps a third heat sealing step is required wherein "heat sealing the first layer of packaging foil to the second layer of packaging foil about the periphery of the battery cell." It is only this last step that is shown by the cited reference of Xing et al.

Next with regard to the use of the term in connection with the Xing et al. reference, Applicant submits that the term heat seal is disclosed in Xing et al. However, the heat seal only applies to the bond or seal created between the top and bottom

layers along their periphery. Furthermore, as clearly illustrated by Applicant in describing the prior art and as clearly shown by Xing et al. the term does not apply to areas that are not bonded together through the heating process. It should be noted that simply placing an item "in contact" with another and applying heat to a different area does not constitute heat sealing, as suggested by the examiner.

If the examiner's contentions regarding heat sealing are upheld, it is respectfully submitted that such still does not show the three different heat seals recited in claim 1, as Xing et al. only discloses the third heat seal about the periphery.

As the present rejection stems from a recitation of the previous rejection, Applicant addresses the previous rejection herein.

Then, the examiner appears to be rejecting the Applicant's claimed invention based on the contention that Xing et al. discloses that the foil layer is heat sealed to the battery. The examiner states that the foil "when heated, may bond onto itself or onto the metallic layer such that a hermetic seal is formed around cell 32 (COL 4, lines 35-40)." However, this statement and the reference in the specification does not disclose that the foil is actually heat sealed to the battery, as clearly disclosed and claimed in Applicant's claim 1. The cell in the Xing et al. patent is encased in foil and then heat is applied to only the periphery portion of the foil overlaying itself to bond the foil about its periphery, see specification Col. 4, line 54 through Col. 5, line 3. This portion of the Xing et al. patent specifically states that "the polymeric adhesive and sealant layer is the inner layer of the flexible laminate, it contacts itself along the three peripheral edges where the flexible laminate extends beyond cell 32..." (Col 4, lines 54-57) and that "Heat and pressure are applied to the three extending peripheral edges to cause the polymeric adhesive and sealant material to soften and bond itself together to form a generally

U-shaped flange 38 about the periphery of cell 32...thus forms a seal about the periphery of the battery.." Applicant respectfully submits that sealing the peripheral edge is clearly not heat sealing the first layer of packaging foil to the top surface of the battery cell or heat sealing the second layer of packaging foil to the bottom surface of the battery cell as specifically claimed by Applicant.

The examiner has contended that the cited reference does not contain any specific conditional language reciting that the heat is applied "only" to the peripheral edges. Applicant respectfully submits that more importantly the cited reference does not state that heat is applied to any other area besides the peripheral edge, and therefore the position taken by the examiner is not supported by the reference and is simply conjecture on the part of the examiner. Furthermore, the specification does state that the heat is applied "around" the cell, see Col. 4, Lines 34, 39 and along the "periphery" see Col. 4, Lines 56, 61, and 63 and Col. 5, Line 1.

It should be noted that it has been commonly understood that the heat sealing process would destroy a typical battery cell. In Xing et al. the "bag" encapsulates the battery cell by sealing the bag about the periphery of the battery cell. However, careful attention is paid not to heat the active portions of the battery cell, i.e., the bag is not heat sealed to the top and bottom portions of the battery cell as claimed by Applicant. As such, the method and the end product shown in Xing et al. are different from the method and end product made according to Applicant's method. The examiner is respectfully reminded that the method described in Xing et al. was specifically identified and described by Applicant in its BACKGROUND OF THE INVENTION and therein distinguished from this method, see Applicant's specification page 2, lines 7-22. It was in view of this type of prior art sealing process that the Applicant devised its improved method and product.

(2) Claim 7

The just described argument applies equally to claim 7 as they also include the general limitation that the foils are heat sealed directly to the battery itself rather than around the battery to form a bag.

(2) Claim 13

The just described argument applies equally to claim 13 as they also include the general limitation that the foils are heat sealed directly to the battery itself rather than around the battery to form a bag.

(B) Claims 6, 12 and 16

With regard to claims 6, 12 and 16, it is well settled that the obviousness of an invention cannot be established by combining the teaching of the prior art absent some teaching, suggestion or incentive supporting the combination, see *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *Ashland Oil, inc. v. Delta Resins and Refractories, Inc.*, 776 F.2d 281, 227 USPQ 657 (Fed. Cir. 1985); *ACSHospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 221 USPQ 929 (Fed. Cir. 1984); *Pentec, Inc. v Graphic Controls Corp.*, 776 F.2d 309, 227 USPQ 766 (Fed. Cir. 1985). Moreover, the mere fact that the prior art could be modified in the manner suggested by the examiner does not make such a modification obvious unless the prior art fairly suggests the desirability of the modification, see *In re Gordon*, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984). Here, the references do not suggest any motivation for, or the desirability of, Applicant's unique method of producing a packaging directly upon a battery cell. As such, it is improper to utilize these references to establish obviousness.

It is acknowledged that the tendency to resort to "hindsight" based upon applicant's disclosure is often difficult to avoid due to the very nature of the examination process.

However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art. MPEP 2142. This is "especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." *In re Dembiczak*, 175 F.3d994, 50 USPQ2d 1614, 1617 (Fed. Cit 1999) citing *WL. Gore & Assoc., Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1553, 220 USPQ 303, 313 (Fed. Cir. 1983). With this in mind, a hindsight-based obviousness analysis must be supported by evidence which is "clear and particular". *In re Denbjczak/c*. It is insufficient to simply offer a broad range of sources or to make conclusory statements, as "[broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence". *Id.*

Applicant respectfully submits that the examiner has claimed the present invention to be obvious utilizing hindsight, speculation and conclusory statements which are not, in fact, supported by the cited references, to come up with a combination that would either destroy the clear intention of the reference or modify such in a manner that goes against the clear teachings of the reference. Applicant respectfully submits that the examiner's contention that heat is applied to the battery cell or that the reference does not recite that heat is applied "only" to the periphery is just such a conclusory statement which is unsupported by the reference. Furthermore, it is submitted that it is only through such hindsight that the Applicant's invention can be gleaned from the cited references. Applicant respectfully contends that the invention is not obvious, but instead is novel and therefore worthy of patent protection.

Applicant hereby submits that as this method is different and as it produces different structures. As such, Applicant's method and products produced thereby are neither anticipated nor

made obvious by this reference and therefore should be allowed.

The requisite fee due upon filing of this brief is attached. Any additional fee is to be charged to Baker Donelson Bearman Caldwell & Berkowitz, PC, Deposit Account No. 11-0553.

Respectfully submitted,



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CLAIMS APPENDIX

1. A method of sealing a battery cell having a top surface, a bottom surface and peripheral edges, the method comprising the steps of:

(a) positioning a first layers of packaging foil over the top surface of the battery cell;

(b) positioning a second layer of packaging foil over the bottom surface of the battery cell; and

(c) heat sealing the first layer of packaging foil to the top surface of the battery cell, heat sealing the second layer of packaging foil to the bottom surface of the battery cell, and heat sealing the first layer of packaging foil to the second layer of packaging foil about the periphery of the battery cell.

2. The method of claim 1 wherein said first layer and said second layer of packaging foil are multi-layered laminates which includes at least one metallic layer and at least one polymer layer.

3. The method of claim 1 wherein step (c) the heat sealing is conducted in part by two oppositely disposed pressure applying means between which the top layer, battery cell and bottom layer are passed.

4. The method of claim 1 wherein step (c) the first layer is sealed to a majority of the top surface of the battery cell.

5. The method of claim 4 wherein step (c) the second layer is sealed to a majority of the bottom surface of the battery cell.

6. The product formed by the method of claim 1.

7. A method of sealing a battery cell having a top surface, a bottom surface and peripheral edges, the method comprising the steps of:

- (a) providing a first layer of packaging foil;
- (b) providing a second layer of packaging foil;
- (c) positioning a battery cell between the first and second layers of packaging foil;

- (d) heating the first and second layer of packaging foil;

and

- (e) pressing the first layer against the top surface of the battery cell and pressing the second layer against the bottom surface of the battery cell,

whereby the heating and pressing of the first and second layers against the battery cell causes the first and second layers to be sealed to the battery cell.

8. The method of claim 7 wherein said first layer and said second layer of packaging foil are multi-layered laminates which includes at least one metallic layer and at least one polymer layer.

9. The method of claim 7 wherein step (e) the pressing of the packaging foils against the battery cell is conducted by two oppositely disposed pressure applying means between which the top layer, battery cell and bottom layer are passed.

10. The method of claim 7 wherein step (e) the first layer is sealed to a majority of the top surface of the battery cell.

11. The method of claim 10 wherein step (c) the second layer is sealed to a majority of the bottom surface of the battery cell.

12. The product formed by the method of claim 7.

13. A method of sealing a battery cell having an exterior top surface, an exterior bottom surface and exterior peripheral edges, the method comprising the steps of:

- (a) providing two sheets of overlaying packaging foils;
- (b) positioning a battery cell between the two sheets of packaging foil;
- (c) heat sealing the packaging foil to the exterior surface of the battery cell.

14. The method of claim 13 wherein the packaging foil is comprised of multi-layered laminates which includes at least one metallic layer and at least one polymer layer.

15. The method of claim 14 wherein step (c) the packaging foil is sealed to a majority of the exterior surface of the battery cell.

16. The product formed by the method of claim 13.

EVIDENCE APPENDIX

None

RELATED PROCEEDINGS APPENDIX

None